

Dead Horse Point State Park

Hazard Mitigation Plan

2006



**Prepared by the Utah Division of Emergency Services and Homeland
Security**

INTRODUCTION	2
STATEMENT OF RISK	3
WHAT IS HAZARD MITIGATION?	3
OVERVIEW	3
Dead Horse Point State Park	4
Dead Horse Point State Park Campground and Facilities	5
Dead Horse Point State Park Trails	5
Grand and San Juan Counties Overview	6
HAZARDS	8
FLOODING	8
EARTHQUAKE	8
LANDSLIDES	9
WILDFIRE	9
SEVERE WEATHER	10
DROUGHT	11
MISCELLANEOUS	11
DEAD HORSE POINT STATE PARK HAZARD MITIGATION RECOMMENDATIONS	12
MAPS	14

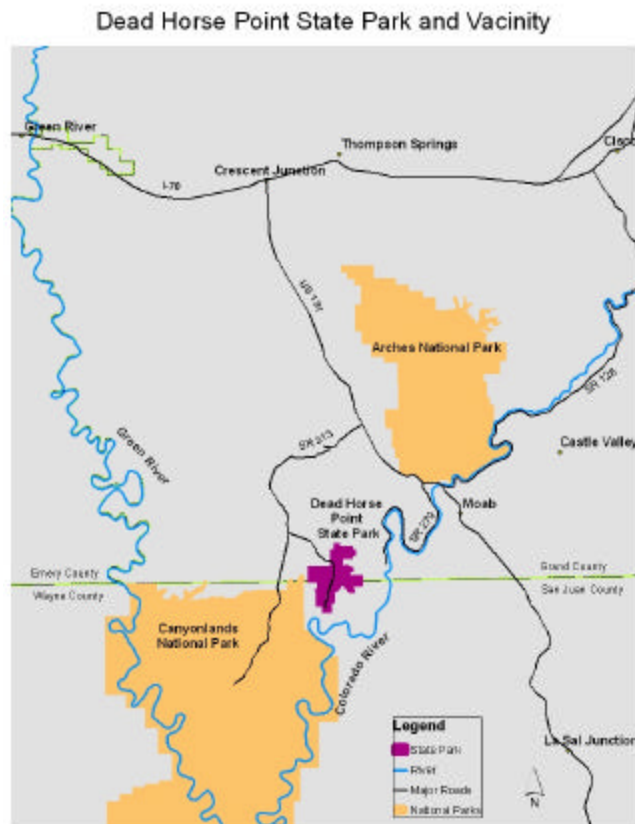
INTRODUCTION

Dead Horse Point State Park is located 32 miles West of Moab, Utah. Dead Horse Point State Park has the potential to experience and be impacted from a natural hazard event.

This plan attempts to identify the hazards, understand what is vulnerable and develop solutions that can significantly reduce the threat to life, property and economic stability of Dead Horse Point State Park. An overview of natural hazards in Grand and San Juan County was essential in the development of this plan.

Much of the information and development of mitigation strategies was taken from the Southeastern Association of Governments 2004 Natural Hazard Mitigation Plan. A regional perspective was used in identifying and developing mitigation strategies. This gives the plan a broader sense of the hazards and more importantly the secondary impact from these hazards to the Dead Horse Point State Park facilities.

This is not an emergency response or management plan. Certainly, this plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this plan is to support better decision making directed toward avoidance of future risks and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a natural hazard threat.



STATEMENT OF RISK

The scope and purpose of this mitigation plan is to define and identifying natural hazards, which could affect Dead Horse Point State Park. During the planning process landslide, earthquake, wildfire, drought, severe weather, and miscellaneous hazards were evaluated. The overall risk of property, lives, and the environment at Dead Horse Point State Park from these natural hazards is very limited.

WHAT IS HAZARD MITIGATION?

Hazard mitigation is defined as any cost-effective action(s) that has the effect of reducing, limiting, or preventing vulnerability of people, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures, which can be used to eliminate or minimize the risk to life and property, fall into three categories. First: are those that keep the hazard away from people, property, and structures. Second: are those that keep people, property, and structures away from the hazard. Third: are those that do not address the hazard at all but rather reduce the impact of the hazard on the victims such as insurance. This mitigation plan has strategies that fall into all three categories.

Hazard mitigation measures must be practical, cost effective, and environmentally and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the value of anticipated damages

Overview



http://www.americansouthwest.net/utah/dead_horse_point/state_park.html

Dead Horse Point State Park

Dead Horse Point is situated atop a high plateau at an elevation of about 6,000 feet above sea level. From the point, a "layer cake" of geologic time may be viewed, revealing 300 million years of the earth's geologic history. While standing on the canyon rim, 8,000 feet of geologic strata is visible looking from the peaks of the 12,000-foot high La Sal Mountains to the river below.

Millions of years of geologic activity created the spectacular views from Dead Horse Point State Park. Deposition of sediments by ancient oceans, freshwater lakes, streams and wind blown sand dunes created the rock layers of canyon country. Igneous activity formed the high mountains that rise like cool blue islands out of the hot, dry desert.

Erosion continues today as the river winds from the Continental Divide high in the Colorado Rocky Mountains to the Pacific Ocean at the Sea of Cortez (a distance of 1,400 miles) sculpting ancient rock layers into the spectacular panorama seen from Dead Horse Point.

The plants and animals of Dead Horse Point have adapted to a land of scarce water and extreme temperatures. Plants grow very slowly here. Trees 15 feet tall may be hundreds of years old. Most desert animals are nocturnal, active only during cooler evenings and mornings. Some have large ears to dissipate heat, while others metabolize water from food.

Dead Horse Point is a peninsula of rock atop sheer sandstone cliffs. The peninsula is connected to the mesa by a narrow strip of land called the neck which is only 30 yards wide. There are many stories about how the peninsula received its name. According to one legend, around the turn of the century the point was used as a corral for wild mustangs roaming the mesa top. Cowboys rounded up these horses, herded them across the narrow neck of land and onto the point. The neck was then fenced off with branches and brush, this created a natural corral surrounded by cliffs straight down on all sides leaving no where for the horses to go. The cowboys then choose the horses they wanted and let the others go free. One time, for some unknown reason, horses were left corralled on the waterless point where they died of thirst with the Colorado River 2,000 feet below.

Because of the magnificent views over the Colorado valley, Dead Horse Point was declared a state park in 1959. A visitor center was built in 1991, and features petrified wood, petrified dinosaur bones, ammonite, and shell fossils. Dead Horse Point is a small state park covering just over 5,200 acres of land at the edge of the plateau just north of the Island in the Sky region of Canyonlands.

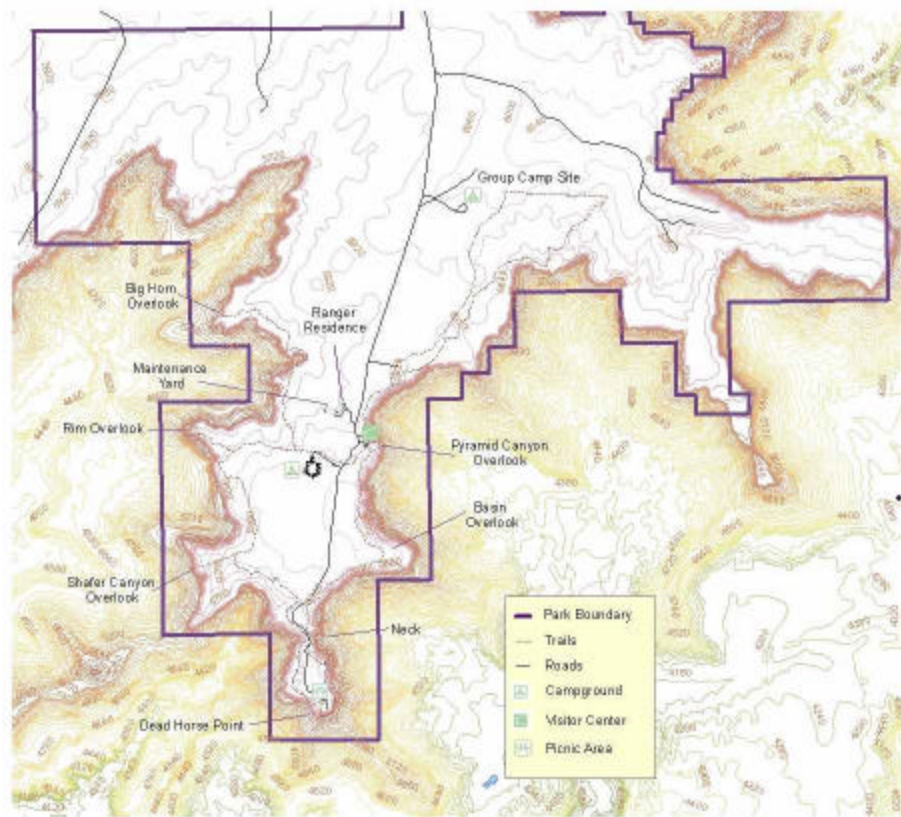
Desert animals have only a slight edge on the harsh environment in which they live. Chasing or harassing them uses up precious reserves they cannot afford to lose.

Cryptobiotic soil and potholes are unique ecosystems found at Dead Horse Point. They are very fragile and should not be disturbed.

Dead Horse Point State Park Campground and Facilities

Dead Horse Point State Park facilities include a visitor center, 21-unit campground, picnic area, modern rest rooms, sanitary disposal station and interpretive trail. The park is open year round and offers hiking, camping, and picnic areas. There are also two rock houses where Park Rangers live year round, a triplex for the seasonal help, a maintenance yard with a couple of sheds and equipment, and water tanks in the park.

Dead Horse Point State Park Detailed Map



Dead Horse Point State Park Trails

The trails do not go down from the rim but a few miles of the trail run quite close to the unfenced cliff edge and through meadows on the plateau. The entrance road passes over a narrow neck of land with a sheer drop off just a few yards away to the left and right, and ends at a parking lot close to the far end of the promontory, where 500 foot high vertical walls of Wingate sandstone fall away at all sides.

Grand and San Juan Counties Overview

Grand county was formed from part of Emery County and legally become Grand County on March 13, 1890. Moab became an incorporated city in 1902, but was not recognized by the State of Utah as such until 1937 when it had grown to a population 800.

The first white men to enter the present area of Grand County were Spanish explorers who discovered a crossing of the Colorado River at the site of the present highway bridge at Moab. Later Spanish traders and American fur trappers developed the route known as the Spanish Trail, using that crossing and one across the Green River above the present Emery County town of that name.

The first attempt by to settle the Moab area was by Mormon colonists that resulted in a failure. The Elk Mountain Mission reached Moab Valley in 1855 and established a small community, but the Indians who were already farming the fertile Colorado River bottoms regarded them as competition and drove them out after they had been there only a few weeks. Not until the very late 1870s and 1880s did a few Mormon families find it possible to build permanent homes.

Most of the history of Grand County has been the story of small family farms and orchards, mining for potash and uranium, and livestock. Large sheep and cattle companies have found abundant forage for their livestock in the canyons and the LaSal Mountains, and cowboys and outlaws figure prominently in the area's folklore. Discovery of uranium in 1952 began an era of mineral extraction in the county, swelling the population from 3,000 to nearly 10,000 residents in just three years. Potash, salt mining and milling operations added to the local economy until 1983 when the market for uranium dropped. Most mining and milling operations ceased at that time.

Most recently the income from tourism has been the county's major economic resource. Arches National Monument was established in 1929, and consistently increasing numbers of visitors led to its upgrading to National Park status in 1971. During the 1970s and 1980s Moab became perhaps the most important center for river running, mountain-bicycling, and four-wheel drive recreation in Utah. In 2005 the county population was estimated at 8,743 by the US Census Bureau.

Grand County Land Ownership

Land Ownership:	Acres	County Percentage
BLM	1,555,499	66.2
Forest Service	57,300	2.4
National Park Service	76,602	3.3
Other Federal	1,630	0.1
Utah State Trust Lands	348,595	14.8
Utah State Park & Recreation	3,226	0.1
Utah State Wildlife Reserves	8,463	0.4
Native American	198,339	8.4
Private Lands	101,782	4.3

Totals	2,351,436	100
--------	-----------	-----

San Juan legally became a county in 1880. San Juan County is the largest in the State of Utah and the second largest in the country at over 2.1 million acres.

A quarter of the land is part of the Navajo Nation who occupies a large part of San Juan County from the San Juan River to the Arizona border. Although there were a few white residents along the San Juan River before 1879, the Mormon scouts who planned the famous Hole-in-the-Rock Trail that year began the full-scale settlement of San Juan County. The 180 pioneers who left Escalante in the fall of that year arrived at the present site of Bluff on April 6, 1880.

Farming along the San Juan River bottoms was a chancy proposition, for the treacherous river either flooded or went dry too often for dependable irrigation. Early cattlemen like the brothers Al and Jim Scrup did better in the rough canyon country than the farmers. After a decade of fighting the elements many settlers discovered that life was somewhat easier in the high country around the Abajo Mountains, and the towns of Blanding and Monticello replaced Bluff as San Juan's main focal points.

Mining has been an inconsistent but exciting part of the economy of the county. A gold rush on the San Juan River in the early 1890s was short-lived, but miners in Glen Canyon of the Colorado eked a better living from deposits along the river bars. Oil and gas exploration around the turn of the century was productive, and one can still see wells operating along the San Juan River. The uranium boom of the early 1950s brought large numbers of people into the area and created a few large fortunes.

At present most residents see tourism as their most promising economic resource, particularly since the creation of Lake Powell in the early 1960s. Rainbow Bridge is the most popular tourist attraction in the county, but the marinas at Hite, Hall's Crossing, and Piute Farms draw large numbers of visitors, and river trips through Cataract Canyon and on the San Juan are also popular. In 2005 the county population was estimated at 14,444 by the US Census Bureau.

San Juan County Land Ownership

Land Ownership:	Acres	County Percentage
BLM	2,074,247	40.1
Forest Service	450,549	8.7
National Park Service	587,375	11.4
State of Utah	406,415	7.9
Native American	1,220,846	23.6
Private Indian Trust	25,117	0.5
Private Lands	406,367	7.9
Totals	2,170,916	100

HAZARDS

FLOODING

Background

Floods are a natural and inevitable part of life. Some floods occur seasonally when winter or spring rains, coupled with melting snows or torrential rains associated with tropical storms, drain small tributaries and fill river basins with too much water, too quickly. Other floods are sudden, resulting from heavy localized rainfall. These flash floods are raging torrents, which rip through riverbeds, urban streets, and mountain canyons after heavy rains, sweeping everything before them.

In Utah, flash floods typically occur when slow moving thunderstorms produce torrential rainfall. These floods can roll boulders, uproot trees, wash away roads and automobiles, destroy buildings and bridges and scour out new channels. Rapidly rising water can reach heights of 30 feet or more. Furthermore, flash flood-producing rains can also trigger catastrophic mudslides. Often there is no warning that these sudden, deadly floods are coming. Most flash floods in Utah have only caused limited damage, but a few have been very destructive and deadly.

In Utah, over 360 flash floods and more than 170 snowmelt floods have occurred since 1853. In addition, since 1950, 27 people have been killed by floods or flash floods in Utah, making such floods the second greatest weather-related killer in the state (after lightning). Flash floods are most common from July through mid-September.

Dead Horse Point State Park Flooding Vulnerability Assessment

Flooding to Dead Horse Point State Park facilities would be minimal and as a direct result of localized flash flood/ overland flood events. Dead Horse Point sits on top of a plateau. The current campground has small drainage channels that assist in routing floodwater away for campsites and structures. Infrastructure (bathroom, showers, and camp sites) appears to be elevated and/or protected from flooding. In a severe thunderstorm flash flood event, campers and park officials should monitor the area and watch for high water levels and debris and rocks associated with such events.

EARTHQUAKE

Background

In Utah, most earthquakes are associated with the Intermountain seismic belt an approximately 160-kilometer-wide (100 miles), north-south trending zone of earthquake activity that extends from northern Montana to northwestern Arizona. Since 1850, there have been at least 16 earthquakes of magnitude 6.0 or greater within this belt. Most areas

of the state within the Intermountain seismic belt, including southwestern Utah, have experienced large surface-faulting earthquakes in the recent geologic past.

Dead Horse Point State Park Earthquake Vulnerability Assessment

Although an earthquake threat is not necessarily of a concern in this area (Dead Horse Point), such an event would increase the risk of rock falls. This would be based on the location of the epicenter and the magnitude of event.

Additionally, economic systems are such that a large magnitude earthquake on the Wasatch Fault that impacts the Wasatch Front could have considerable financial impact to Dead Horse Point State Park. Repairing earthquake damage reduces financial resources often lessening the amount spent on recreation.

LANDSLIDES

Background

Landslides commonly occur as a result of:

- Heavy rainfall.
- Rapid snowmelt.
- A wet winter and spring, particularly if previous years were also wet.
- Grading that removes material from the base, loads material at the top, or otherwise alters a slope.
- Earthquakes.
- Erosion or previous landsliding removing material from the base of a slope.
- Addition of water to a slope from agricultural or landscape irrigation, roof downspouts, poor drainage, septic-tank effluent, canal leakage, or broken water or sewer lines. (UGS)

Dead Horse Point State Park Landslide Vulnerability Assessment

There are no residential or commercial structures are at risk from landslide within the boundaries of Dead Horse Point. Geologic mapped landslides can be found outside the park boundaries.

WILDFIRE

Background

Factors that influence the potential for wildfires include: type, amounts and conditions of fuel supply (vegetation); temperatures; wind conditions; precipitation patterns; humidity levels; topography and the levels of human activity on the land. Fires in areas of heavy vegetation, if not quickly detected and suppressed can quickly flare out

of control and cause major damage to habitat, crops, livestock, wildlife, people, and structural property.

Most rural wildfires result from thunderstorm activity. In addition, other wildfires are started by acts of human carelessness during activities such as controlled burns of forest areas; burning of ditch banks and fields by landowners; recreational activity such as camping, hunting, and other off-road vehicle travel; and use of both legal and illegal fireworks.

Dead Horse Point State Park Wildfire Vulnerability Assessment

Dead Horse Point State Park is located in an area defined as a medium to high risk for wildfire. There are areas defined as a high risk near the park. Wildfires in the general area may also affect park attendance and air quality concerns. Humans are the ignition source of the majority of Utah's wildfire, campground and campfires increase the number of ignition sources. Wildfires in the Park boundary have been caused by lightning and have burned limited amount of acres.

SEVERE WEATHER

Background

Tropical air from the Gulf of Mexico enters the state from the south and west during July through September and is the source of severe and often violent thunderstorms. Tropical Pacific air masses from the southwest at times have caused extreme floods in the southwest part of the State.

Summer temperatures can reach 100 degrees but averages in the lower 90's. Winter snowstorms, although uncommon, can accumulate significant amounts of snow in the area. Always inquire locally about the weather forecast before beginning your trip.

Lightning can be a serious threat to life and property. According to the National Oceanic and Atmospheric Administration (NOAA), there have been 60 reported deaths and 132 reported injuries from lightning in Utah between 1950 and 2005.

Dead Horse Point State Park Severe Weather Vulnerability Assessment

Extreme heat and thunderstorms that include lightning, cloudbursts and hail have the potential to impact park facilities and park visitors. Severe weather events such as hail, lightning and cloudburst could damage park buildings and campsites. Park visitors and park staff are also in danger of extreme heat summer lightning and thunderstorms.

Several fatalities have occurred in the park in the park due to lightning. There were two fatalities in '71-'72 and five from '85-'88 from being struck by lightning. Fatalities caused by lightning are higher then any other natural disaster in the State of Utah.

DROUGHT

Background

Precipitation fluctuates greatly in Utah's relatively arid climate. As the demand for water continues to increase, even temporary shortages in supply can be disruptive to the normal process in urban and rural environments. Two or more consecutive years of significant reduction in precipitation, particularly snowfall in the mountains, may have serious and far-reaching impacts. The region is currently experiencing its fifth year of drought. The damages from this are yet to be fully comprehended.

Drought and its secondary effects of insect infestation, invasive noxious weeds and wildfire all have significant harmful impacts on the agricultural industry. The County's agricultural section generates the greatest share of output to their respective County's economy.

Dead Horse Point State Park Drought Vulnerability Assessment

Drought may increase insect infestation and reptile migration. Forests of southwestern Utah are infested with several species of beetles and other damaging insects. Although West Nile Virus has not been identified in the area, mosquitoes are prevalent during summer months. Should this become a concern, park visitation could be impacted. Rattlesnakes will move to water during drought and may encounter park staff and visitors.

MISCELLANEOUS

Dead Horse Point sits upon a plateau overlooking the Colorado River. The trail system runs close to the edge of 2000-foot vertical drop-offs. While the Park Ranger cited only two incidents of people have died from falling off the edge there is the possibility of future accidents.

Xtreme sports are becoming more popular and are spreading to all parts of the Country. Extreme sport is a general term for sports featuring speed, height, danger, and a high level of physical exertion, highly specialized gear, or spectacular stunts. A feature of such activities in the view of some is their alleged capacity to induce a so-called adrenaline *rush* in participants. Another characteristic of activities so labeled is they tend to be individual rather than team sports. Extreme sports can include both competitive and non-competitive activities. Xtreme sports include but are not limited to; rock climbing, base-jumping, paragliding, and mountain biking, these are some of the Xtreme sports that have occurred in the boundaries of Dead Horse Point. Most Xtreme are not allowed in State Parks.



A rock wall on the Neck helps keep vehicles from going off the edge.

Dead Horse Point State Park Hazard Mitigation Recommendations

RECOMMENDATION: Minimize potential impacts from flooding due to severe storms.

1. Monitor weather, especially during summer thunderstorm season. NOAA Weather Radios as well as access to National Weather Service web site can assist in this process.
2. Maintain small drainage channels in the camping areas to allow free flow of floodwaters.
3. Continue to develop and update public awareness of flooding, to include flash floods.
4. Educate visitors to the danger of lightning.

RECOMMENDATION: Minimize potential impacts from rock falls.

1. Identify areas for rock falls that would affect facilities, infrastructure, trails, and visitors.

2. Develop an internal response and notification procedure for rock falls.
3. Visitors should continue to be encouraged to stay on trails.

RECOMMENDATION: Minimize potential impacts from wildfire.

1. Monitor State and Federal wildfire mitigation and/or response activities in the area.
2. Post burn restrictions. If possible, distribute wildfire awareness material and discuss burn restrictions in surrounding areas with park visitors.
3. Continue to keep vegetation away from, visitor center, residential area, maintenance yard and camp facilities.
4. Creation of fire suppression capacity by tying into the 20,000-gallon water tank to provide water access points at the visitor center, residential area, maintenance yard and camp facilities.

RECOMMENDATION: Minimize potential impacts from drought.

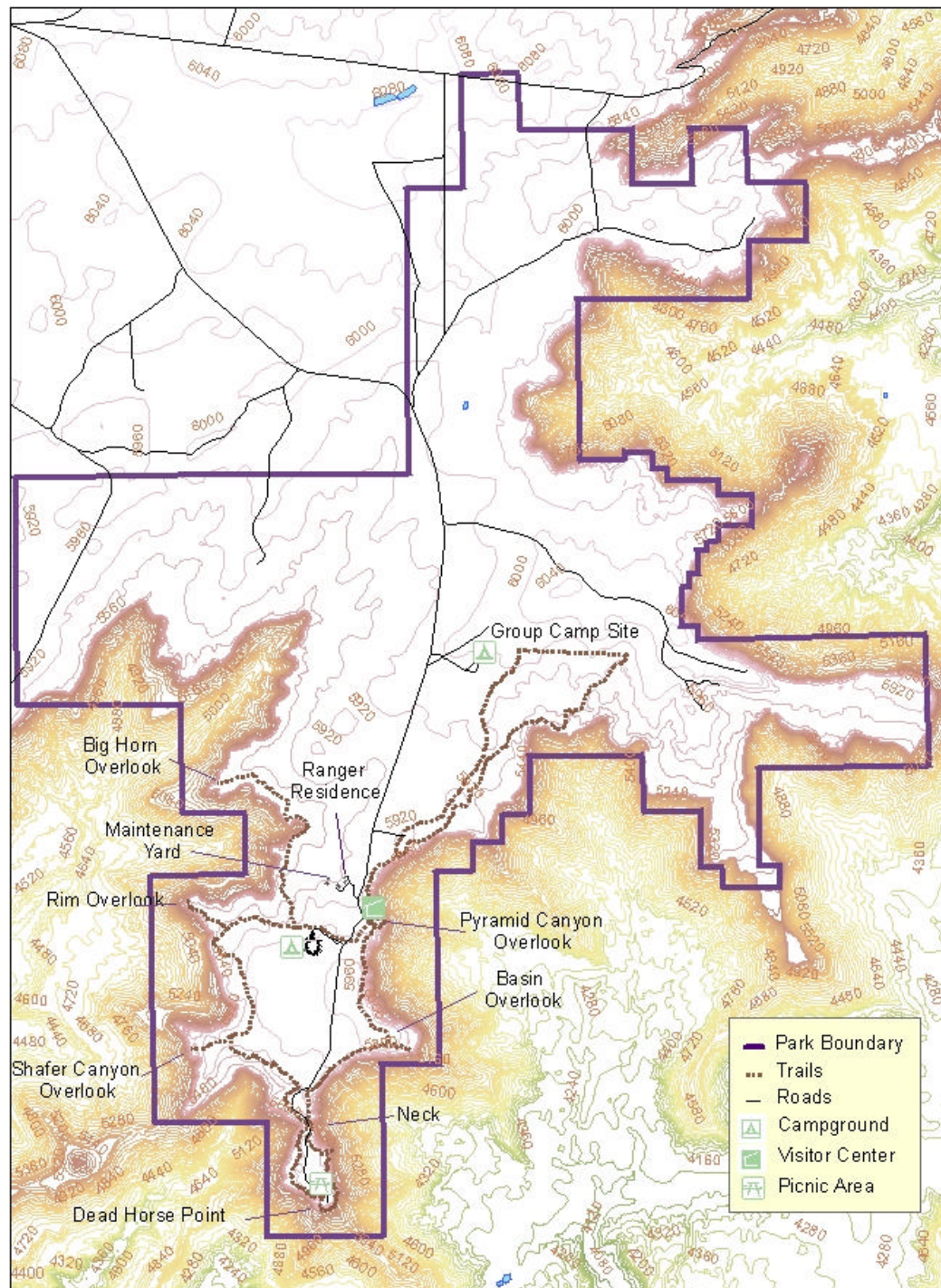
1. Monitor drought conditions through agricultural contacts such as USDA Farm Services Agency, Utah State Department of Agriculture and water conservation efforts through the Utah State Department of Natural Resources, Water Resources.

RECOMMENDATION: Minimize potential impacts from miscellaneous hazards.

1. When dealing with West Nile virus, prevention is the best option. Monitor the potential for West Nile virus through Garfield County Health Department. Make available prevention outreach material to park visitors.
2. Visitors should continue to be encouraged to stay on trails.
3. Xtreme sport education, what is and what is not allowed in the park should be clearly posted and distributed to visitors.
4. Continue to lock water tank connections and gas pumps to prevent any type of vandalism.

Maps

Dead Horse Point Trail System



Dead Horse Point Wildfire Risk

